

Serum vitamin B<sub>12</sub> activity was determined with *Lactobacillus leichmannii* 313 (ATCC 7830). The method employed was the same as that described in Appendix No. 1, 1955, of the Swedish Pharmacopoeia. Values less than 50 μμgm./ml. cannot be measured with sufficient accuracy with this method. Table 1 summarizes the results.

It will be seen that there is a pronounced difference in the serum vitamin B<sub>12</sub> activity of patients with fish tapeworm anaemia and that of the control group. Seven out of eight anaemia patients gave concentrations less than 50 μμgm./ml. A somewhat higher value, 65 μμgm. vitamin B<sub>12</sub> per ml. of serum, was found in this group in one case only. The control group displayed great variations ranging from 180 to 964 μμgm. vitamin B<sub>12</sub> per ml., the average being 561 μμgm. There was no overlapping between the two groups.

To obtain the variations and the mean value of the vitamin B<sub>12</sub> concentrations in the serum of fish tapeworm anaemia patients requires both more comprehensive material and a more accurate method. However, this introductory investigation shows that the vitamin B<sub>12</sub> serum concentrations in fish tapeworm anaemia are of the same range as those in genuine pernicious anaemia. This supports the view concerning vitamin B<sub>12</sub> deficiency in *D. latum* carriers with anaemia.

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<sup>1</sup>Mollin, D. L., and Ross, G. J., *J. Clin. Path.*, 5, 129 (1952).

<sup>2</sup>von Bonsdorff, B., *Exp. Parasitol.*, 5, 207 (1956).

### Stem Canker (*Macrophomina phaseoli*) of Cotton Seedlings in the Sudan Gezira

In some seasons cotton seedlings (*Gossypium barbadense* L.) in the irrigated Gezira area of the Sudan suffer considerable damage from stem canker caused by the fungus *Macrophomina phaseoli* (Maubl.) Ashby, also known as *Rhizoctonia bataticola* (mycelium) and *Sclerotium bataticola* (sclerotia).

First symptoms are the appearance of circular red spots up to about 5–6 mm. in diameter on the cotyledons of seedlings two or three weeks after emergence from the soil. Under favourable climatic conditions, notably high humidity, these spots spread and extend down the cotyledonary stalk to produce a conspicuous reddish-purple lesion at the cotyledonary node. These lesions become brown, dry and fibrous as dissolution of the parenchymatous cortical tissue of the young stem proceeds and eventually small black sclerotia develop. In severe cases the stem is completely girdled at the cotyledonary node, at which point affected plants tend to break (especially if handled), and thereafter die or suffer a severe check to growth. In warm dry weather cankered plants often recover and the disease dries out without causing much damage.

In the 1954–55 season, one of above-average post-sowing rainfall, stem canker was very prevalent in the central and southern Gezira and must have imposed a considerable check on early growth of the crop—a

warning that this disease might become a major problem were earlier sowing of cotton introduced. With such earlier sowing the young crop would experience much heavier post-sowing rain than with present sowing in mid-August, by which date about two-thirds of the season's rain has normally fallen. Thus at the Gezira Research Farm in 1954 stem canker was severe and post-sowing rainfall was much heavier than usual—about 200 mm. as compared with long-term average of about 120 mm.

Although field observations strongly suggest that stem canker is favoured by excessively wet conditions in which the seedlings are exposed to prolonged water-logging, the method of infection is obscure. Attempts to produce the cotyledonary stage of the disease by spraying cultures of the pathogen and by other methods have so far failed, but characteristic stem lesions (from which the fungus was afterwards recovered) resulted from needle inoculation of the green cotyledonary node.

Pycnidia of *M. phaseoli* have not been observed on cotton in the Sudan and it is thought that seasonal infection originates from the soil, wherein the fungus survives the hot dry season in the form of small resistant sclerotia. Supporting this theory is the observation that soil fumigation with chloropicrin tended to increase stem canker incidence at the Gezira Research Farm in 1954–55. Plots fumigated with chloropicrin three to four weeks before sowing showed 24 per cent cankered seedlings (10 gallons/acre), 32 per cent (20 gallons/acre) and 45 per cent (40 gallons/acre) as compared with 24 per cent in unfumigated plots. Plots fumigated with 15 per cent methyl bromide showed 22.5 per cent (20 gallons/acre) and 23.5 per cent (40 gallons/acre), while 0.8 per cent formaldehyde drench using about 160 gallons of commercial formalin per acre gave 23.5 per cent cankered seedlings. The initial damage due to stem canker in the chloropicrin-treated plots was more than counterbalanced by the beneficial effects of fumigation, these plots producing more vigorous plants which finally yielded 32–48 per cent more seed cotton than the unfumigated plots, as compared with yield increases of 8–15 per cent for methyl bromide and 5 per cent for formalin. It is possible that the resistant sclerotia of *M. phaseoli* were able to withstand chloropicrin fumigation whereas soil micro-organisms lacking such resistant propagules were destroyed. Under the resultant conditions of reduced competition *M. phaseoli* flourished and incidence of stem canker increased, but this was not the case in fumigation with methyl bromide and formaldehyde.

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### Relevance of Palaeomagnetic Studies of Jurassic Rocks to Continental Drift

THE early palaeomagnetic studies have largely been confined to the northern hemisphere, where wide sampling of the geological column in Great Britain and North America has done much to establish the reality of polar wandering. Runcorn<sup>1</sup> has also suggested, on the basis of a comparison of the British and American results, that a westward drift of some 24° would account for the systematic difference he has found in the results.